

REMARKS

5 Claim 1 is amended to recite the introduction of electrolyte into electrolytic cell, disclosed on page 6, lines 13-18, of the specification. Production of alkali metal at the cathode and halogen at the anode is disclosed in the specification, page 3, lines 9-14. *See also*, original claim 24.

The specification was objected to because of the oversight pointed out by the examiner. The objection is submitted to be now moot for the oversight is corrected in the amendment.

10 Claims 6, 8, 16, and 23 were objected to because of oversights in dependency and chemical names. The oversights are corrected in the amendment and the objection is submitted to be now moot.

Claims 25, 27, and 29-31 are also amended to correct some editorial oversights.

15 Claims 1-13, 23, and 24 were rejected under 35 USC 102(b) over Angell (US 5,855,809). The rejection is traversed or, alternatively, submitted to be moot in view of the amendment presented above.

20 Angell discloses, Example 2, reacting  $\text{Cl}_3\text{PNSO}_2\text{Cl}$  with  $\text{AlCl}_3$  in a dry box to produce a yellow viscous liquid. Angell also discloses, Example 3,  $\text{LiCl}$  and  $\text{AlCl}_3$  were placed in a Pyrex tube in a dry box. The Pyrex tube and its content were flame-sealed and heated to  $200^\circ\text{C}$  to produce  $\text{LiAlCl}_4$ . The Pyrex tube was then broken in a dry box and added to the liquid, optionally being heated to  $100^\circ\text{C}$ , to produce a quasi-inorganic ionic liquid.

25 The voltammogram of the quasi-inorganic ionic liquid was measured to show a positive current flow corresponding to  $\text{Li}$  deposit using a pseudo  $\text{Pt}$  reference electrode. This showing of a positive current flow corresponding to  $\text{Li}$  deposit is not the same as electrolysis producing  $\text{Li}$  metal.

Angell has a similar disclosure with  $\text{NaAlCl}_4$  in Example 4.

30 It should be noted that the optional heating to  $100^\circ\text{C}$  is for producing a  $\text{LiAlCl}_4/\text{Cl}_3\text{PNSO}_2\text{Cl}/\text{AlCl}_3$  (or  $\text{NaAlCl}_4/\text{Cl}_3\text{PNSO}_2\text{Cl}/\text{AlCl}_3$ ) solution. Making a solution does not electrolyze the solution to produce a metal. Interpreting the  $100^\circ\text{C}$  optional heating, which produces  $\text{LiAlCl}_4/\text{Cl}_3\text{PNSO}_2\text{Cl}/\text{AlCl}_3$  (or  $\text{NaAlCl}_4/\text{Cl}_3\text{PNSO}_2\text{Cl}/\text{AlCl}_3$ ) solution, as electrolysis is submitted to be in error.

It is clear that Angell discloses a nitrogen- and oxygen-free system for measuring the voltammogram of an electrolyte solution. Angell does not suggest an

electrolysis process in an electrolysis cell, which is specifically called for in original claims 23 and 24. Claim 24 further distinguishes over Angell in requiring the production of sodium at the cathode and halogen at the anode. In other words, Angell discloses only a cyclic voltammogram that fits the cyclic deposition and reoxidation of the alkali metal.

As such, Angell does not identically describe the invention, as required by 102(b) for anticipation.

Alternatively, applicants submit that the amended claim 1 clearly distinguishes over Angell in that Angell does not disclose electrolysis in an electrolytic cell. Nor does Angell disclose production of halogen at the anode.

The examiner asserted, Office action, page 3, last three full paragraphs, that Example 4 of Angell is carried out at 100°C, which produces molten sodium. Applicants submit that the examiner was in error.

As discussed above, Angell does not disclose electrolysis at 100°C. The 100°C heating is an optional heating to produce a quasi-inorganic ionic solution. In fact, Angell does not disclose electrolysis.

Claims 14-22 and 25-31 were rejected under 35 USC 103(a) over Angell. The rejection is traversed for the following reasons.

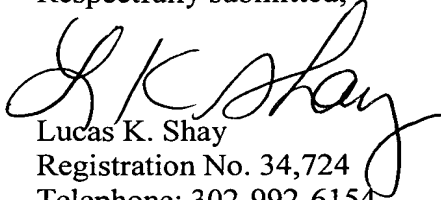
As discussed above, Angell does not disclose or suggest electrolysis at 100°C. The temperature disclosed in Angell is an optional heating for producing a quasi-inorganic ionic solution.

The examiner asserted that it would have been within the expected skill of a routineer in the art to have maintained the temperature of the electrolysis reaction in order to maintain the alkali metal in the molten state. The assertion was in error because electrolysis does not have to be carried out under molten state. Alkali metal electrolysis can be carried out with an aqueous electrolyte. *See, e.g.*, US 6,368,486 (abstract (electrolytes containing water); column 2, lines 39 and 55; column 5, lines 37-51). A copy of the US patent is attached hereto for the examiner's reference.

The rest of the examiner's reasoning for rejecting the dependent claims is submitted to be subjective opinions without support.

For the foregoing reasons and discussions, applicants respectfully request that the objections and rejections be withdrawn.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'L K Shay', written over the printed name and contact information.

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